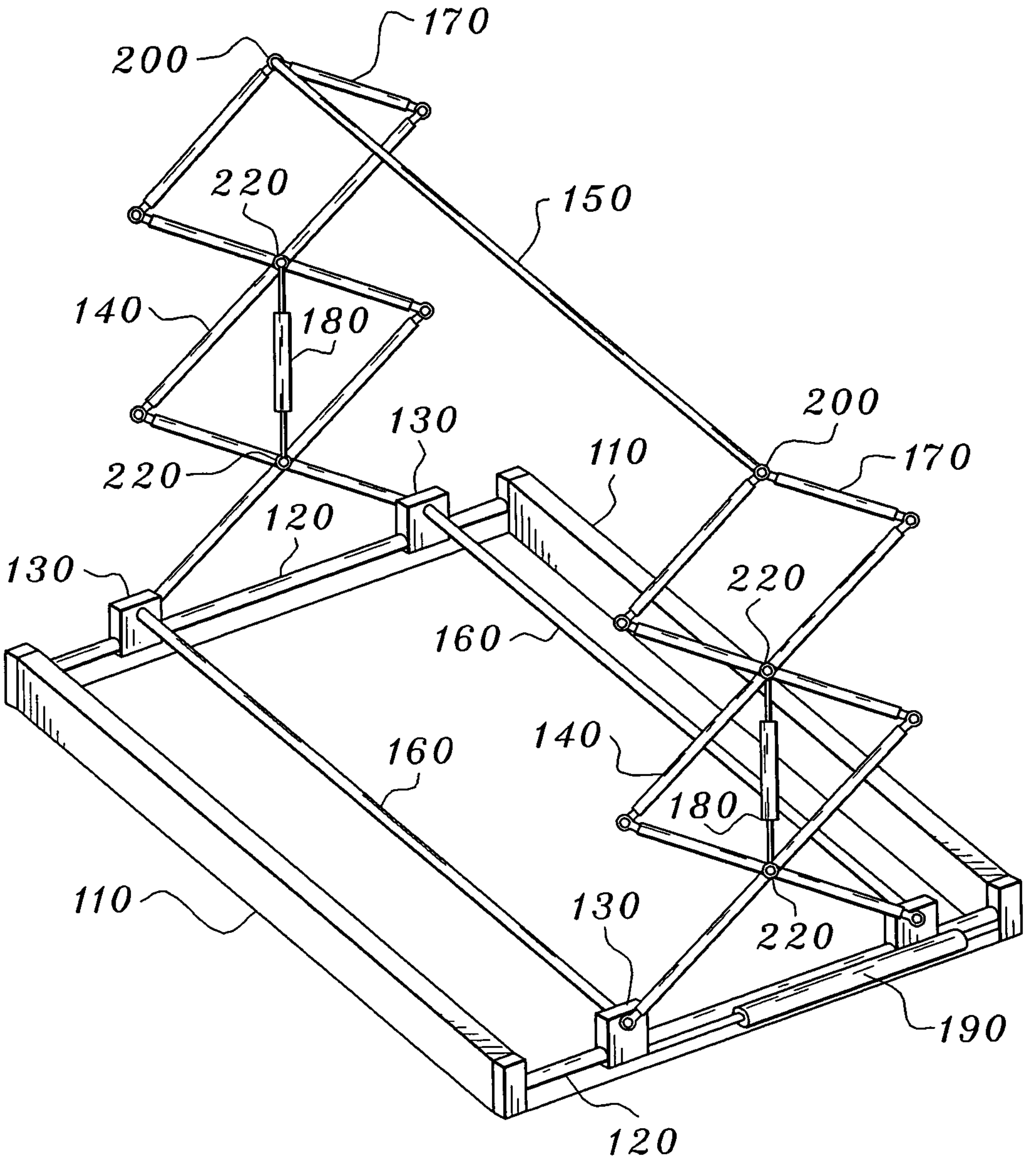


Fig. 1

10/032,993

10/032,993

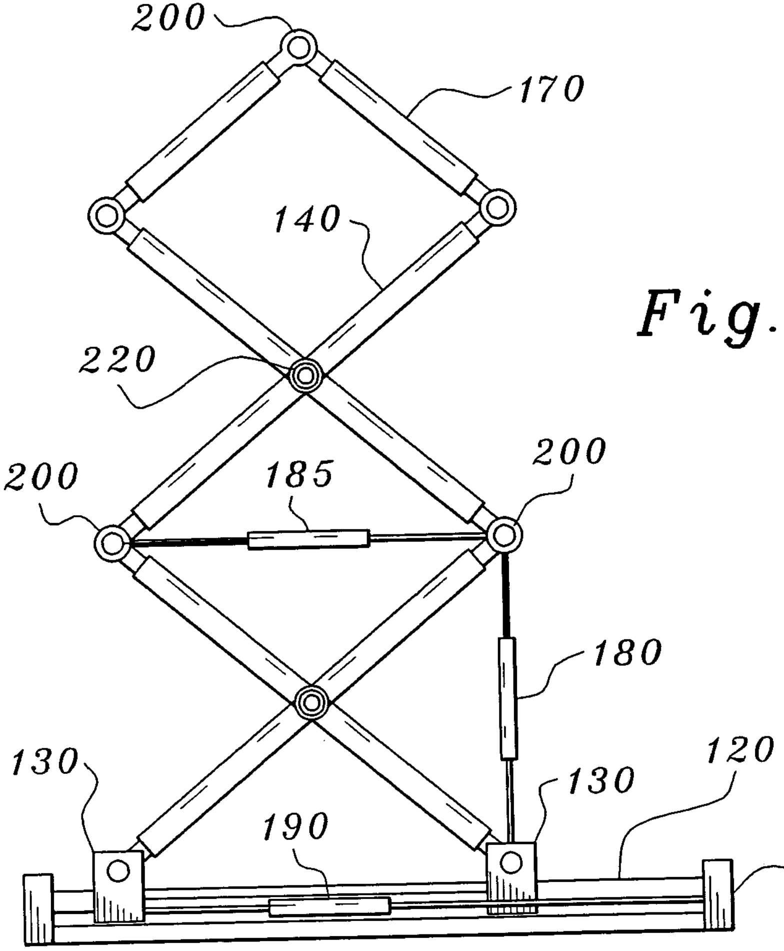


Fig. 2a

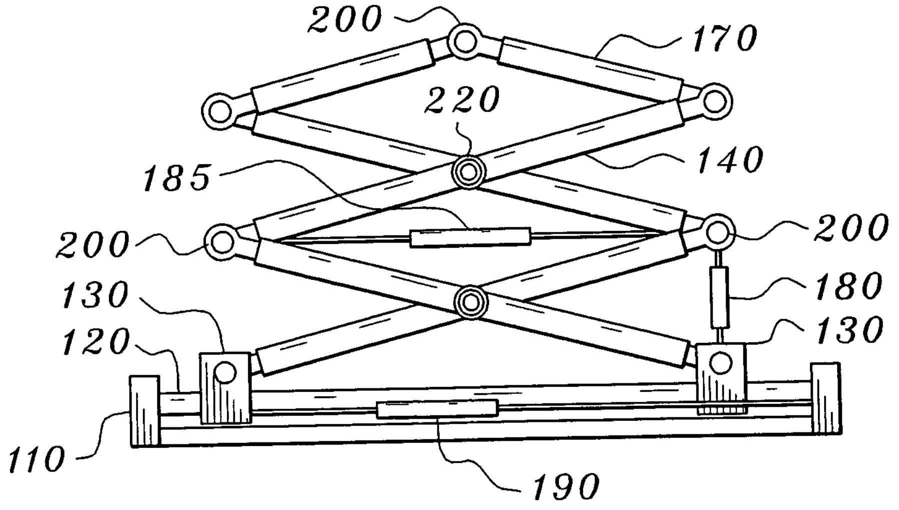


Fig. 2b

10/032,993

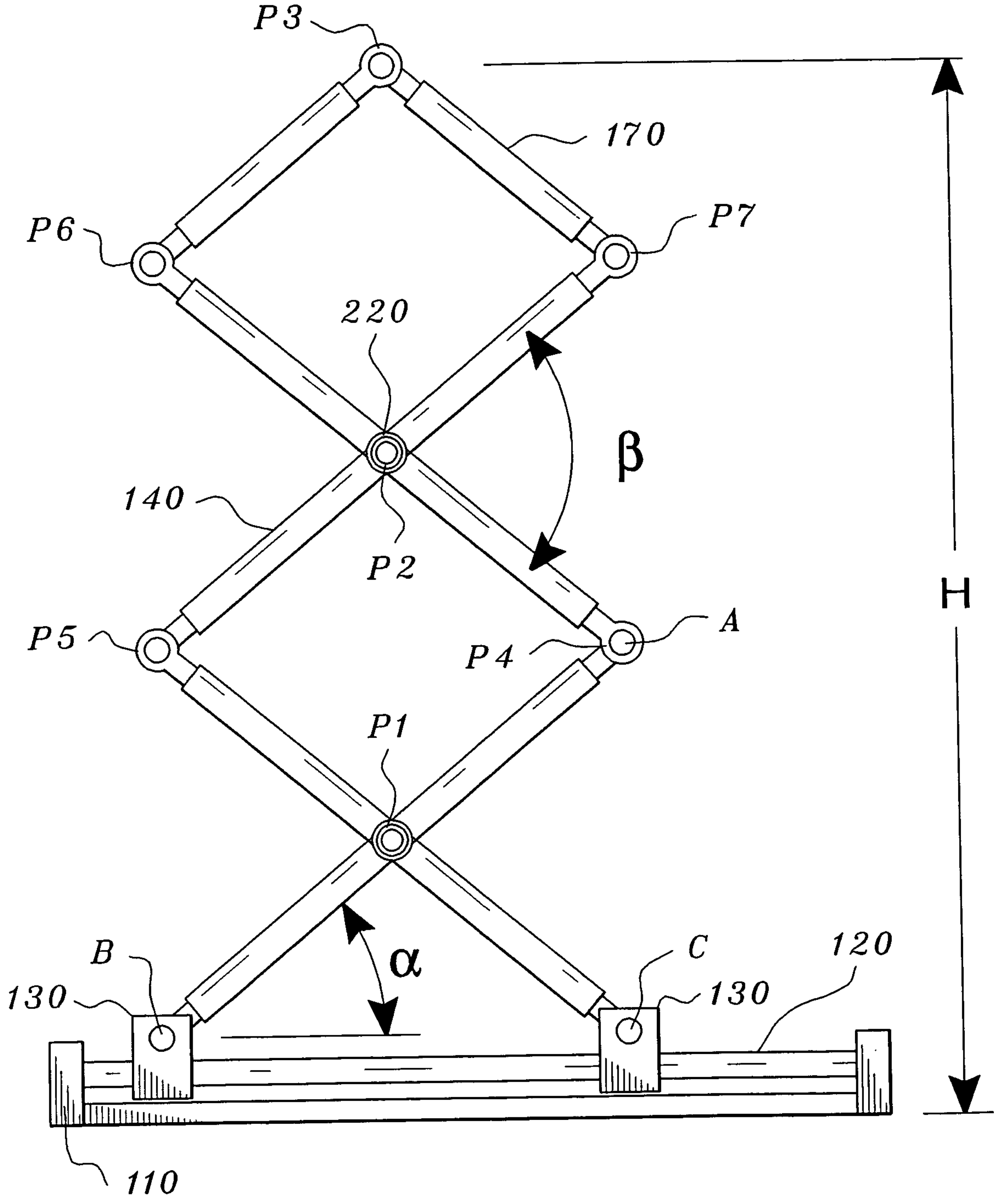


Fig. 2c

10/032,993

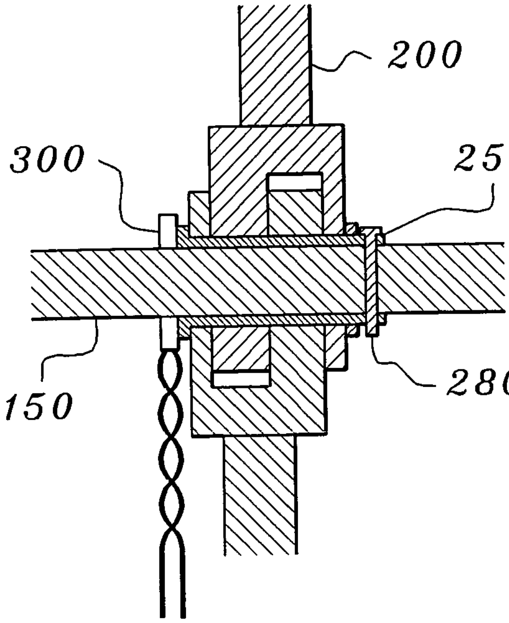


Fig. 3a

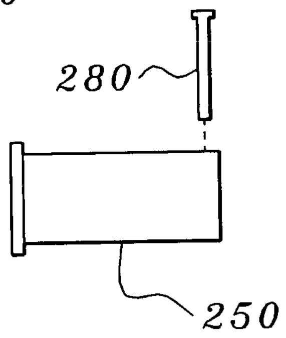


Fig. 3b

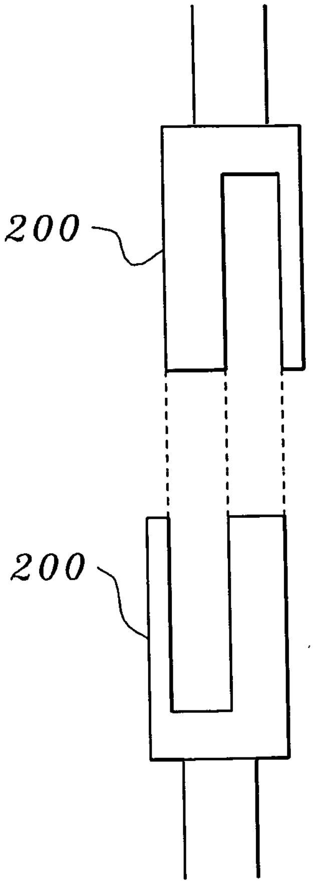


Fig. 3c

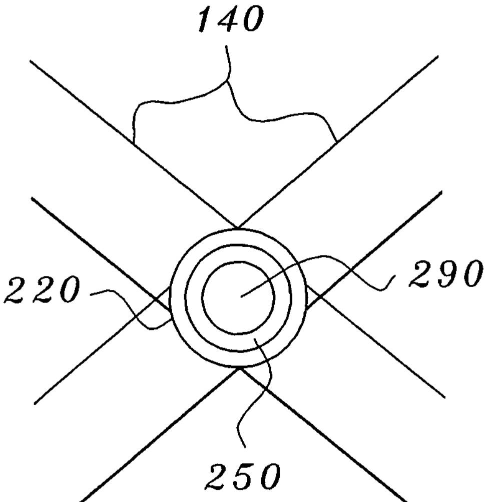


Fig. 3d

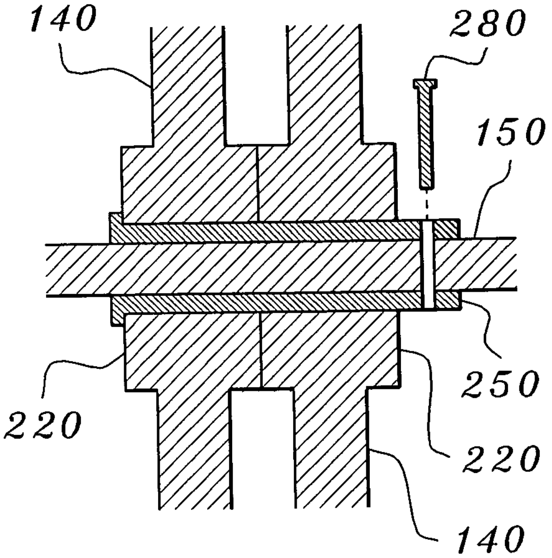


Fig. 3e

10/032,993

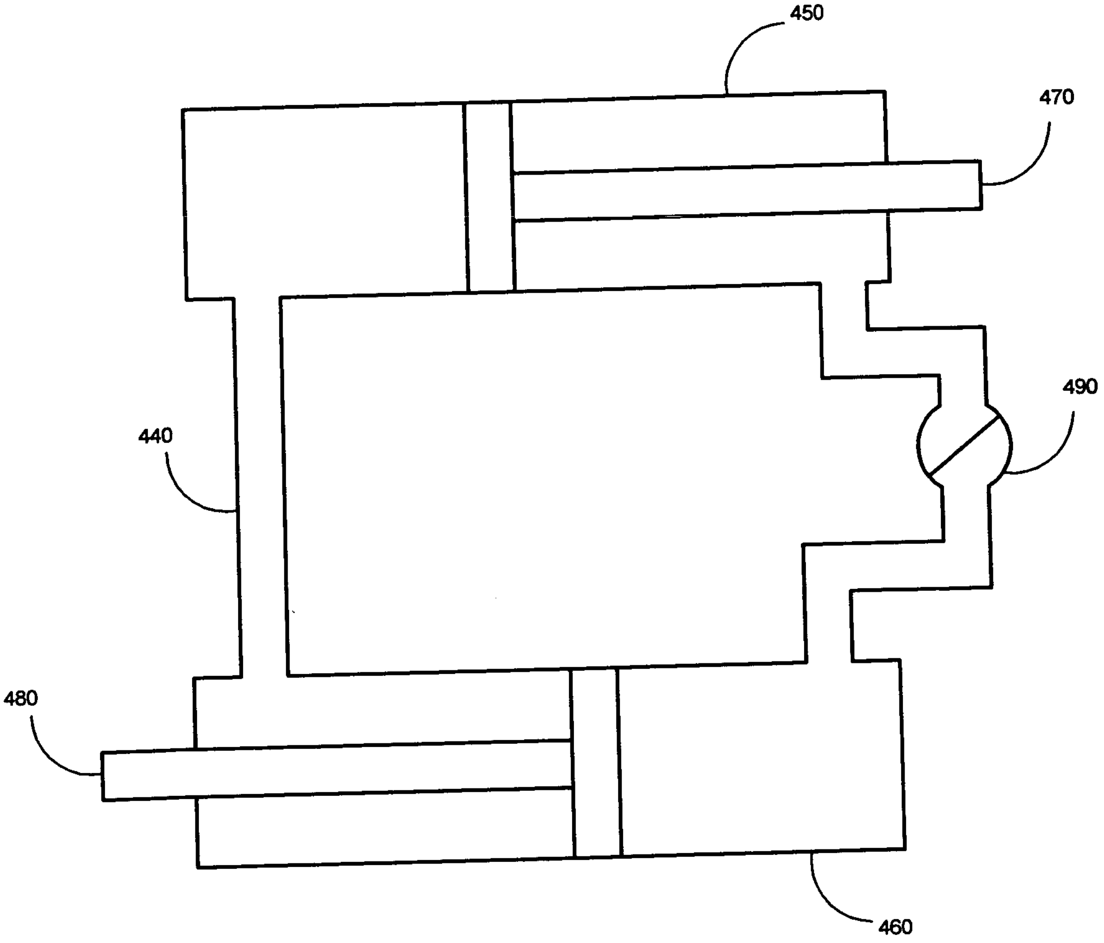


Fig. 4

10/632,993

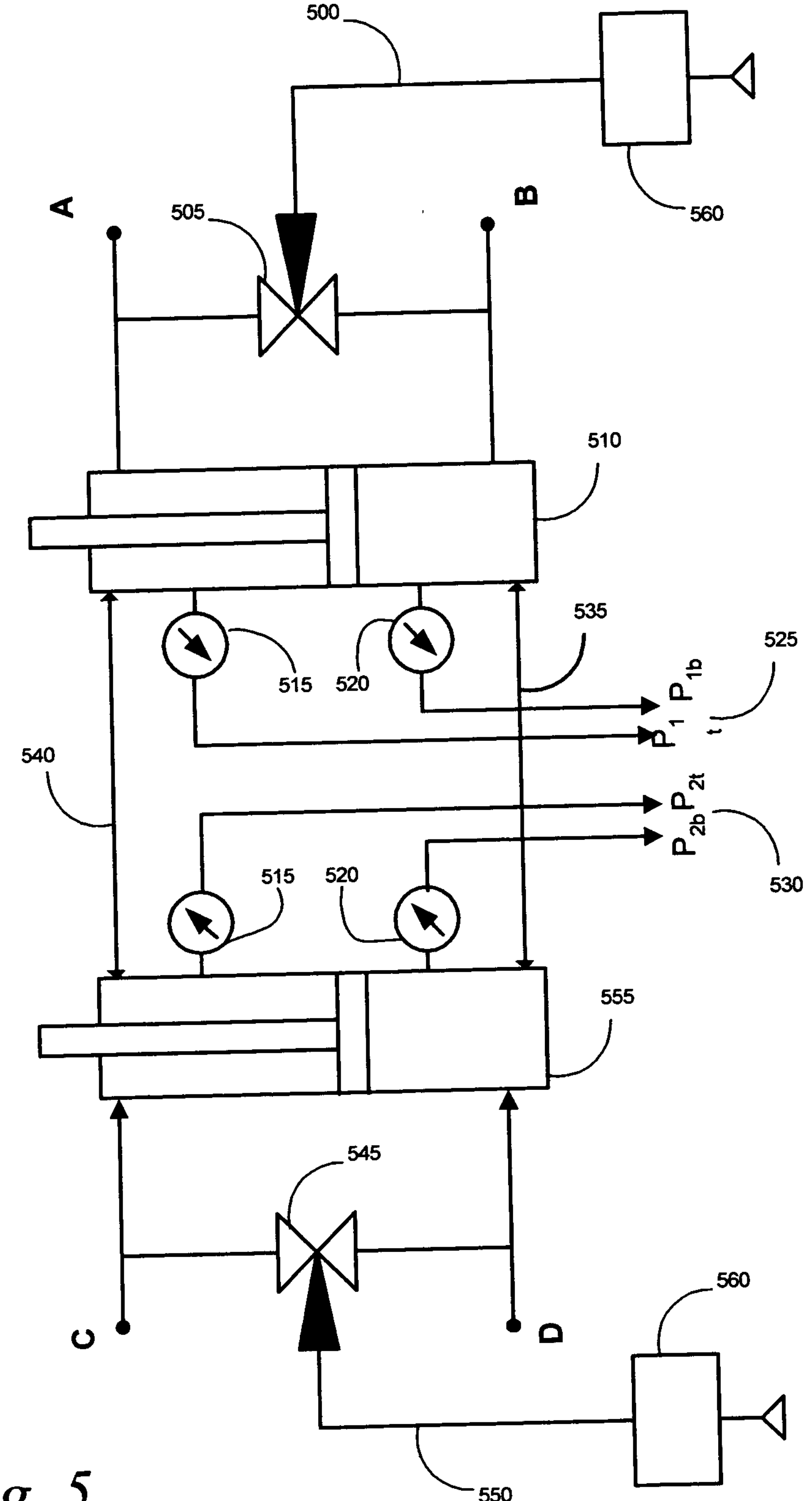


Fig. 5

10/032,993

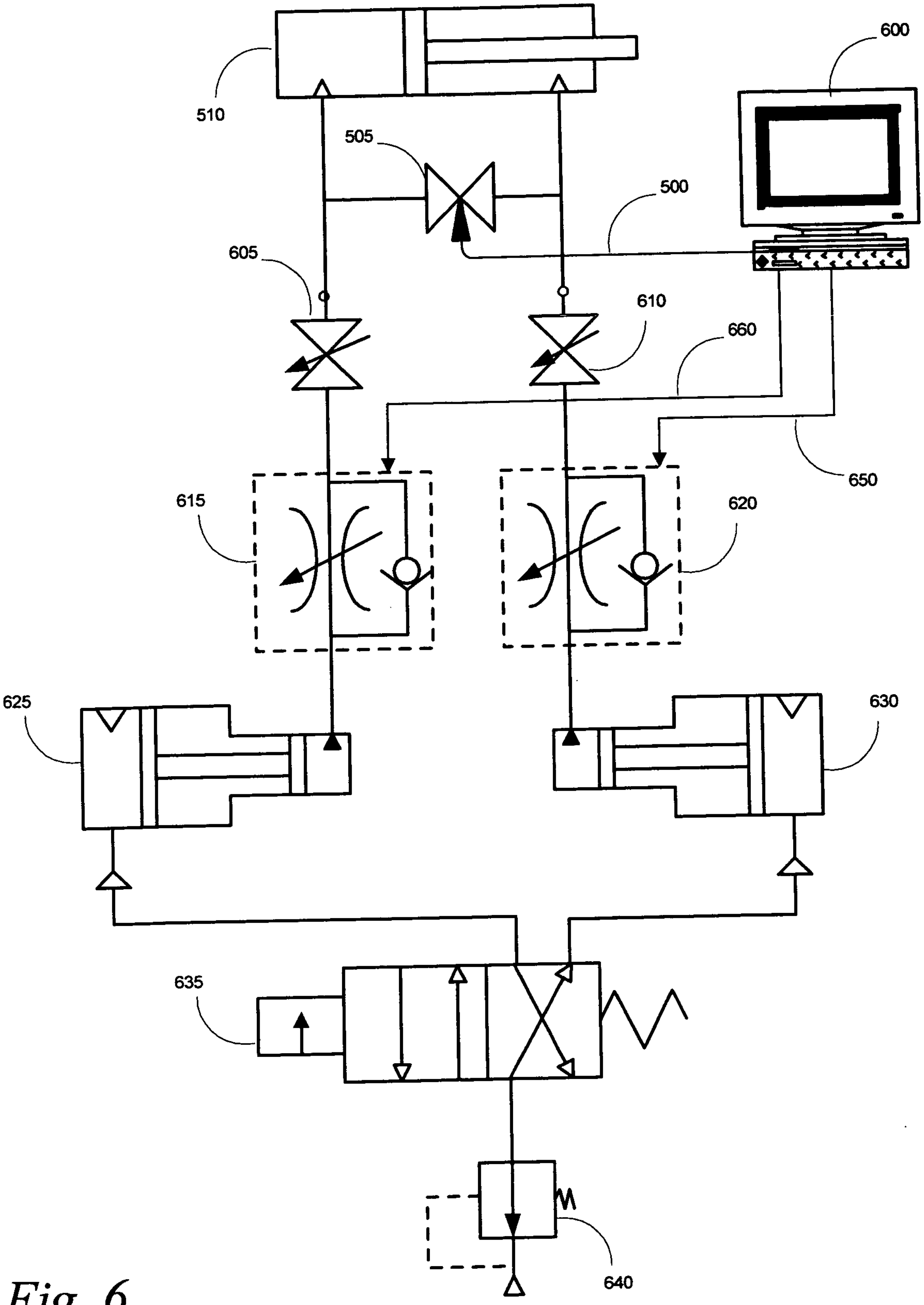


Fig. 6

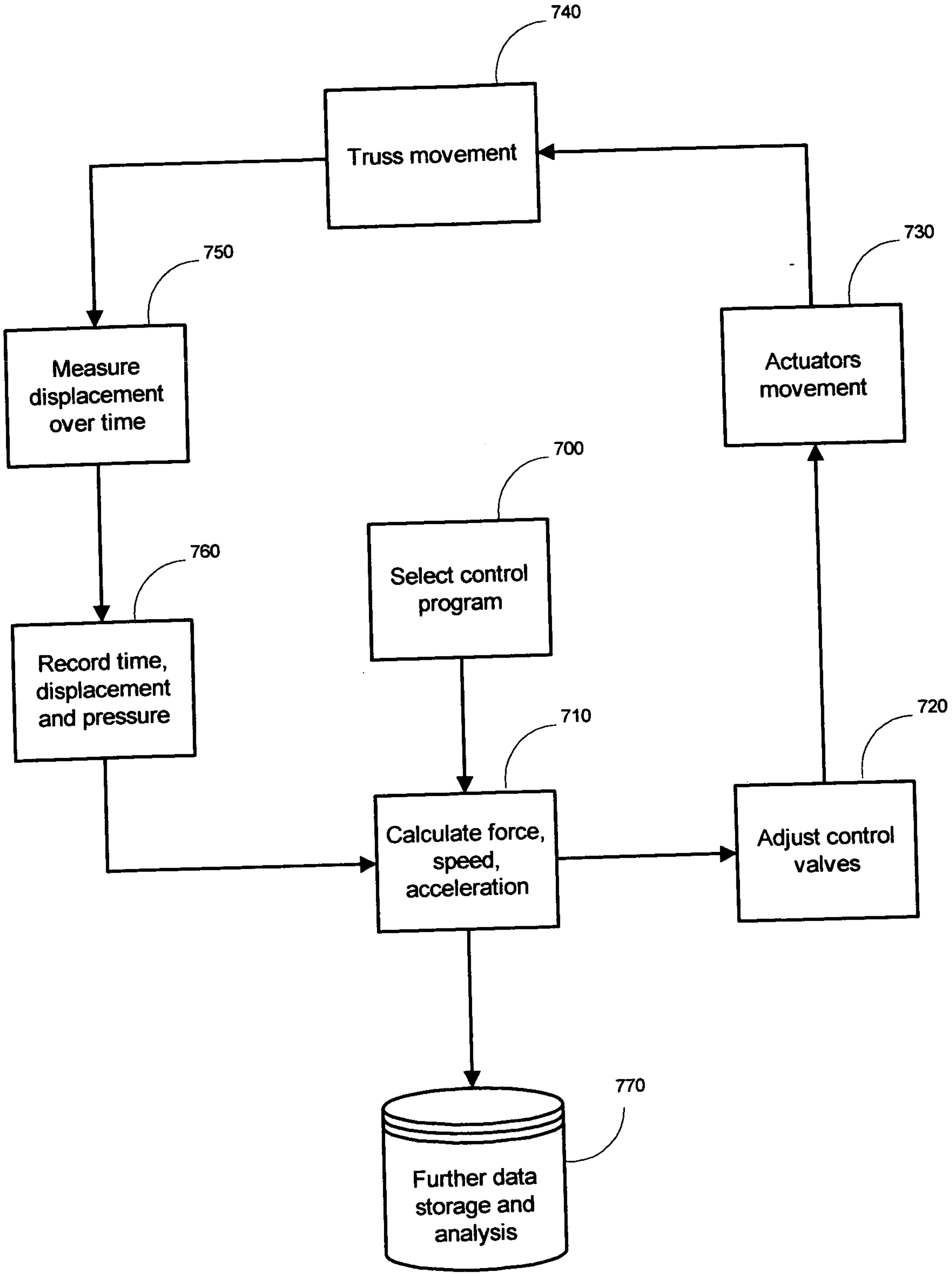

740
Truss movement
750
Measure displacement over time
730
Actuators movement
700
Select control program
760
Record time, displacement and pressure
710
Calculate force, speed, acceleration
720
Adjust control valves
770
Further data storage and analysis

Fig. 7

10/032,993

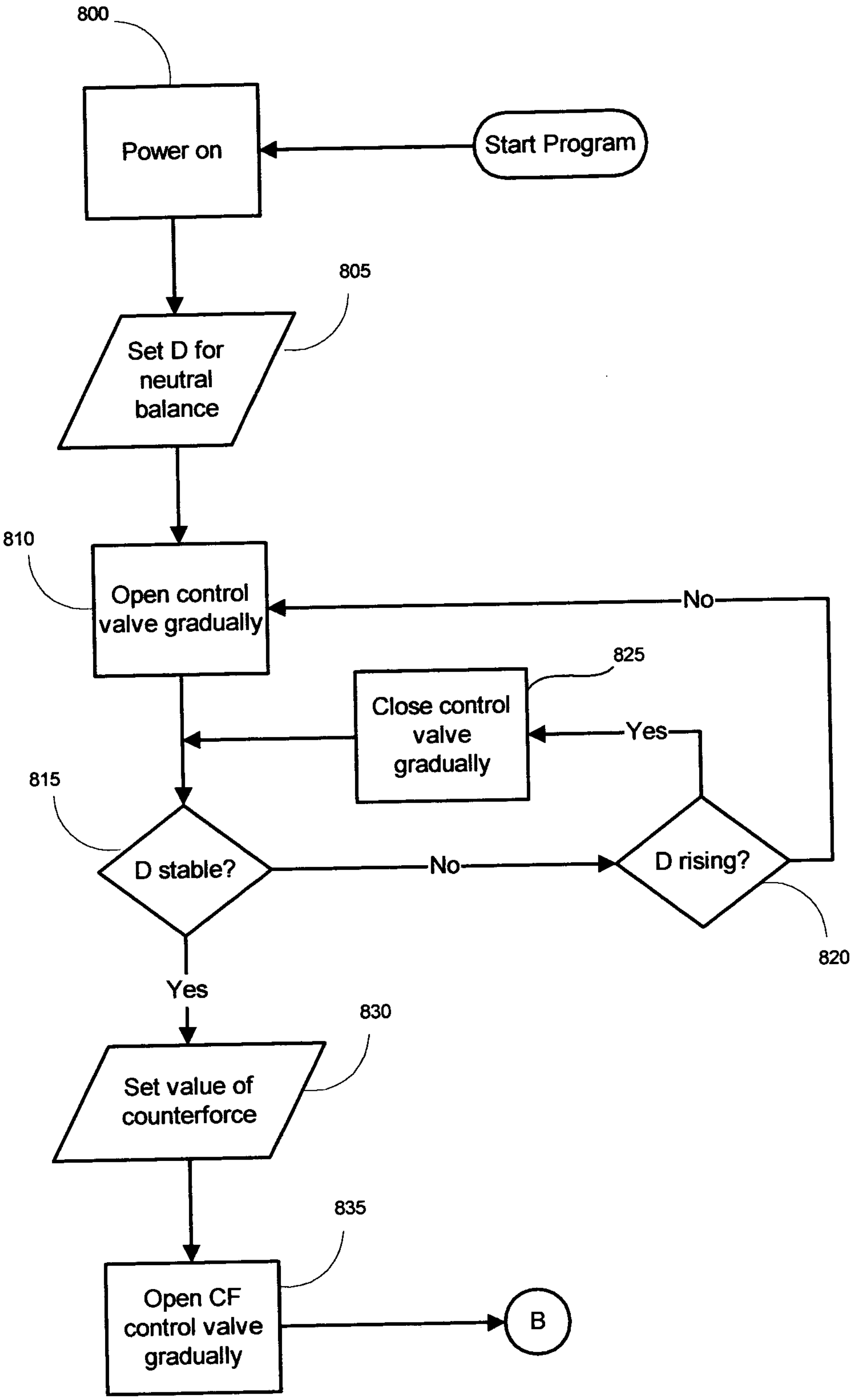

800
Power on
Start Program
805
Set D for neutral balance
810
Open control valve gradually
No
825
Close control valve gradually
Yes
815
D stable?
No
D rising?
820
Yes
830
Set value of counterforce
835
Open CF control valve gradually
B

Fig. 8

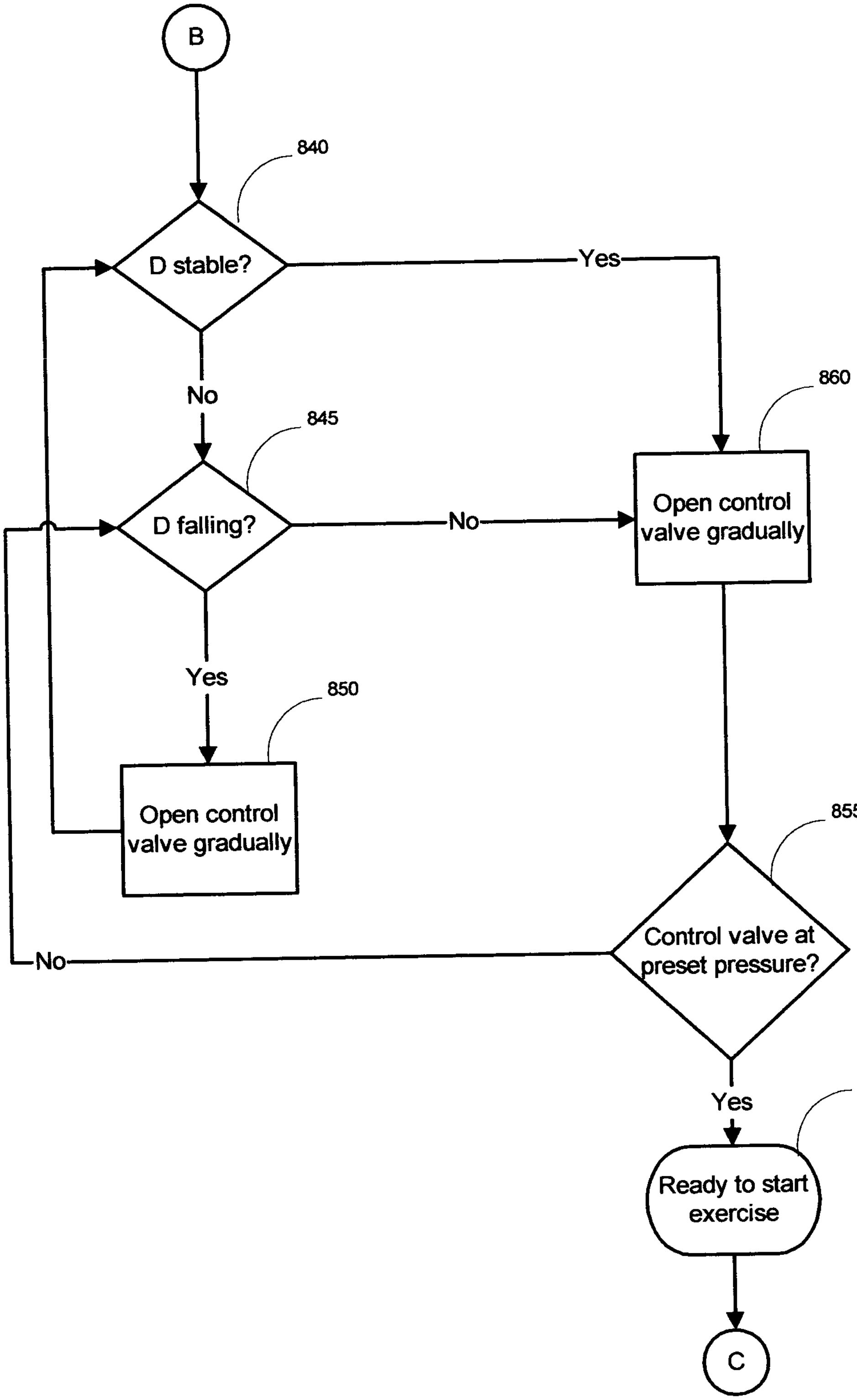

B
840
D stable?
Yes
No
845
D falling?
No
860
Open control valve gradually
Yes
850
Open control valve gradually
855
No
Control valve at preset pressure?
Yes
865
Ready to start exercise
C

Fig. 9

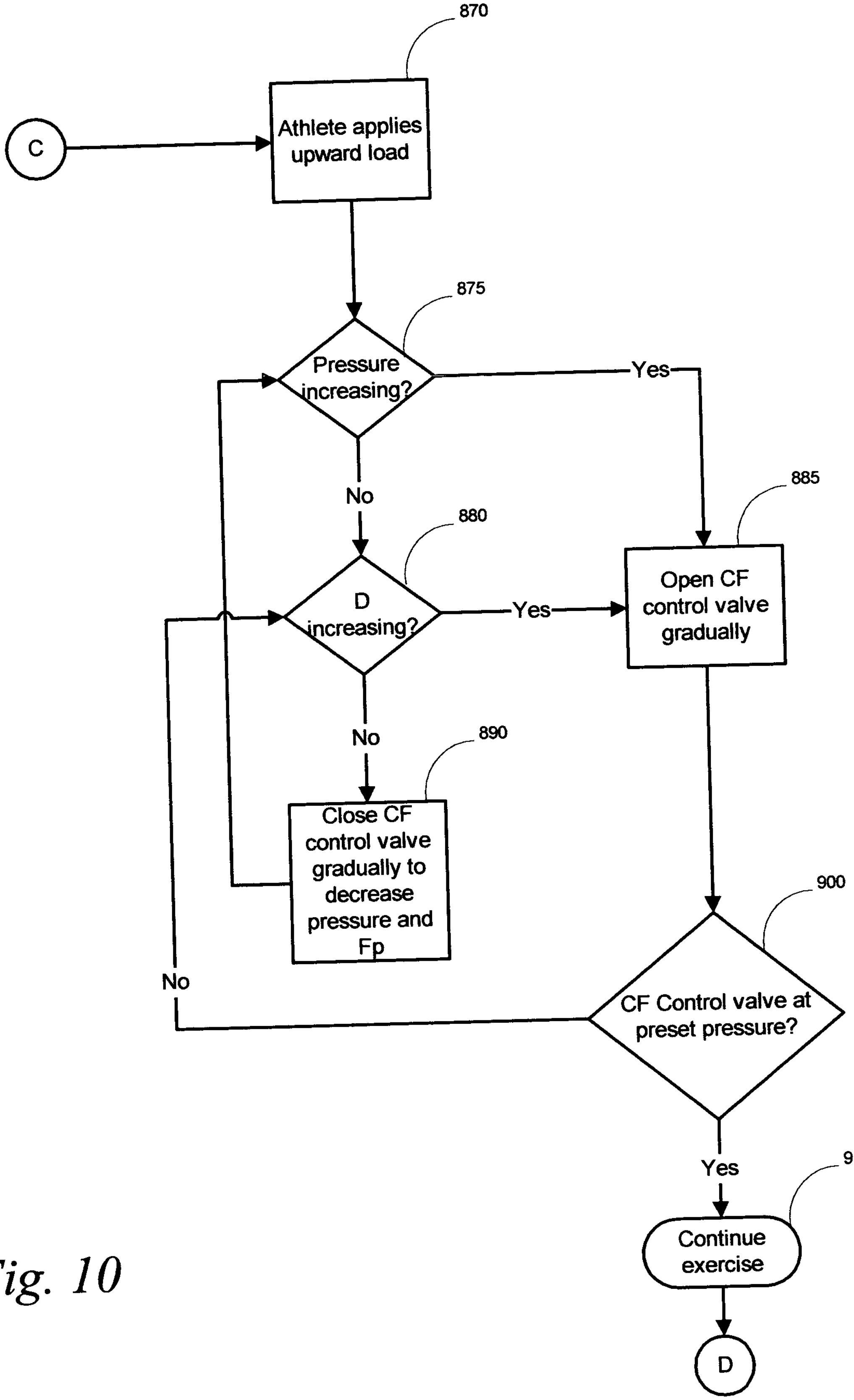

870
C
Athlete applies upward load
875
Pressure increasing?
Yes
No
880
D increasing?
Yes
885
Open CF control valve gradually
No
890
Close CF control valve gradually to decrease pressure and Fp
No
900
CF Control valve at preset pressure?
Yes
910
Continue exercise
D

Fig. 10

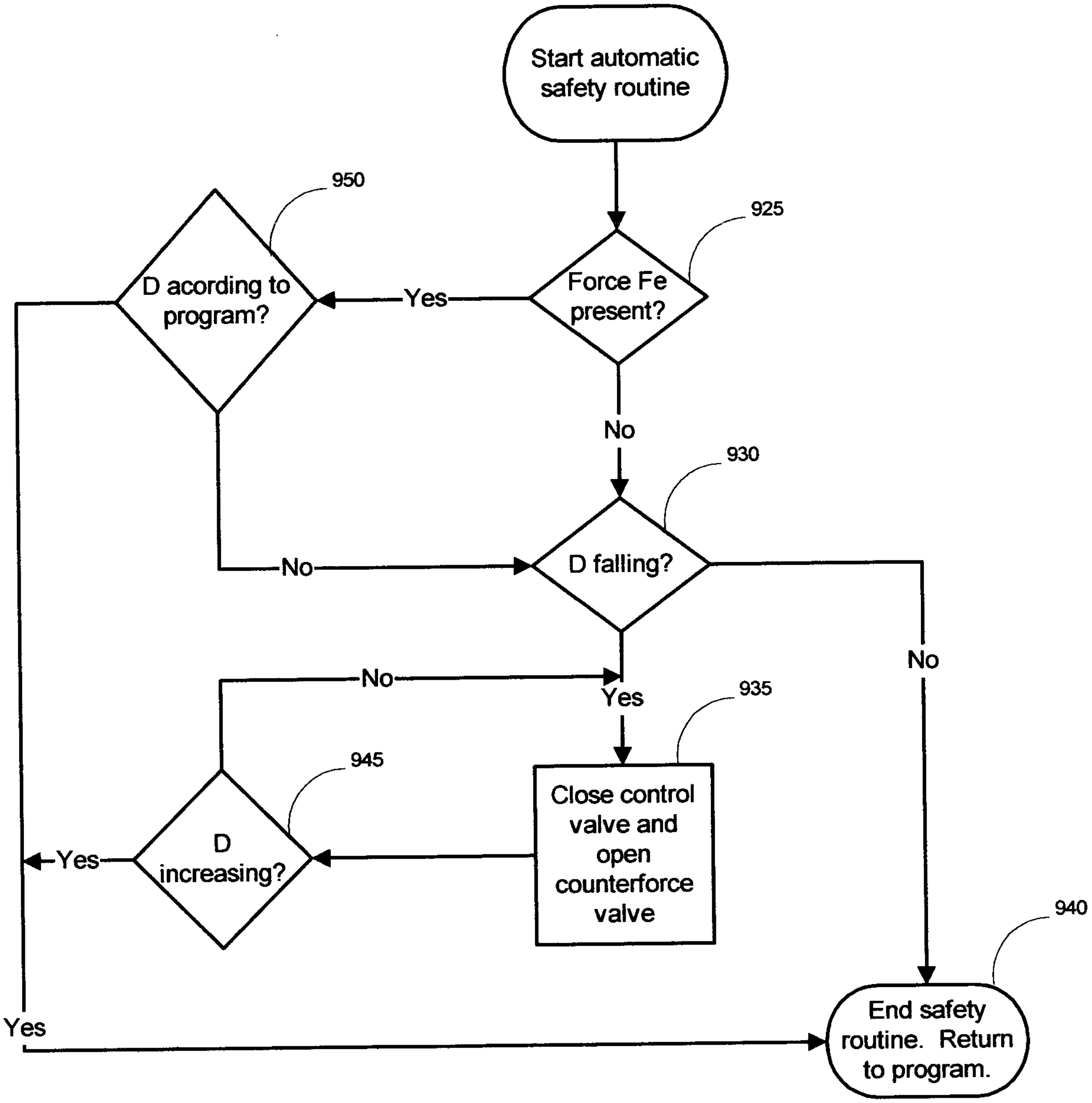

Start automatic safety routine
925
Force Fe present?
Yes
950
D acording to program?
No
No
930
D falling?
No
No
Yes
935
Close control valve and open counterforce valve
945
D increasing?
Yes
Yes
940
End safety routine. Return to program.

Fig. 11

EXAMPLE CONSTANT LOAD RESULTING IN VAR. SPEED

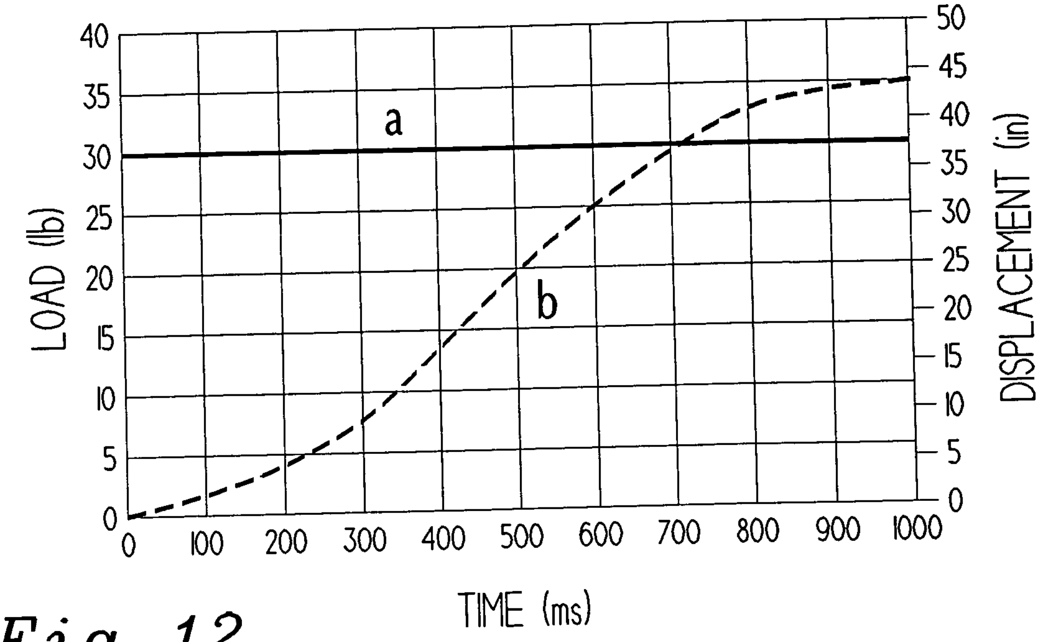


Fig. 12

EXAMPLE VAR. LOAD RESULTING IN VARIABLE SPEED OF MOVEMENT

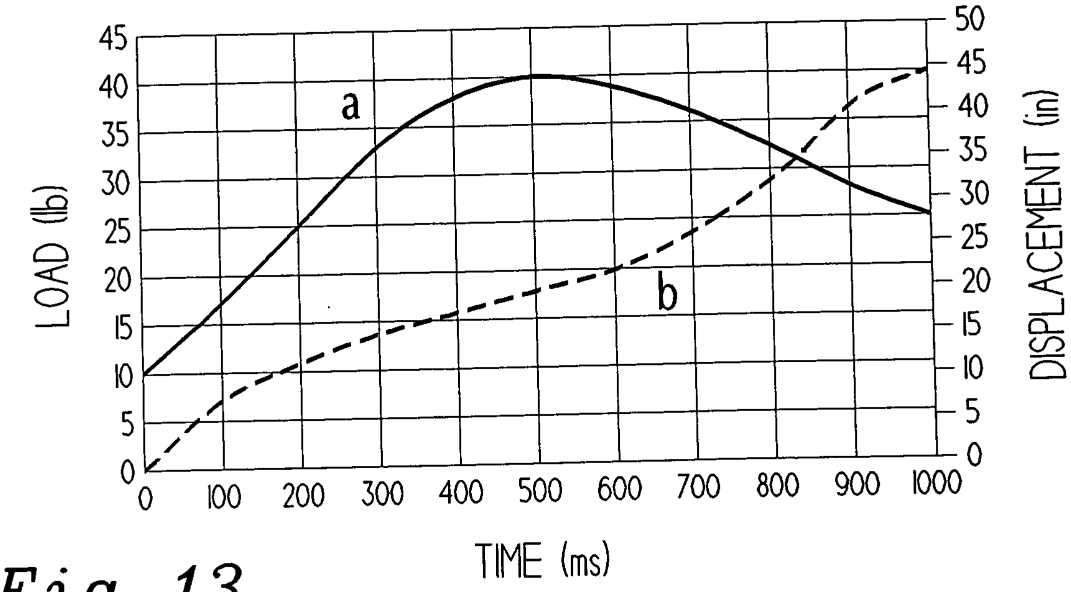


Fig. 13

10/032,993

EXAMPLE VARIABLE LOAD FOR CONSTANT SPEED

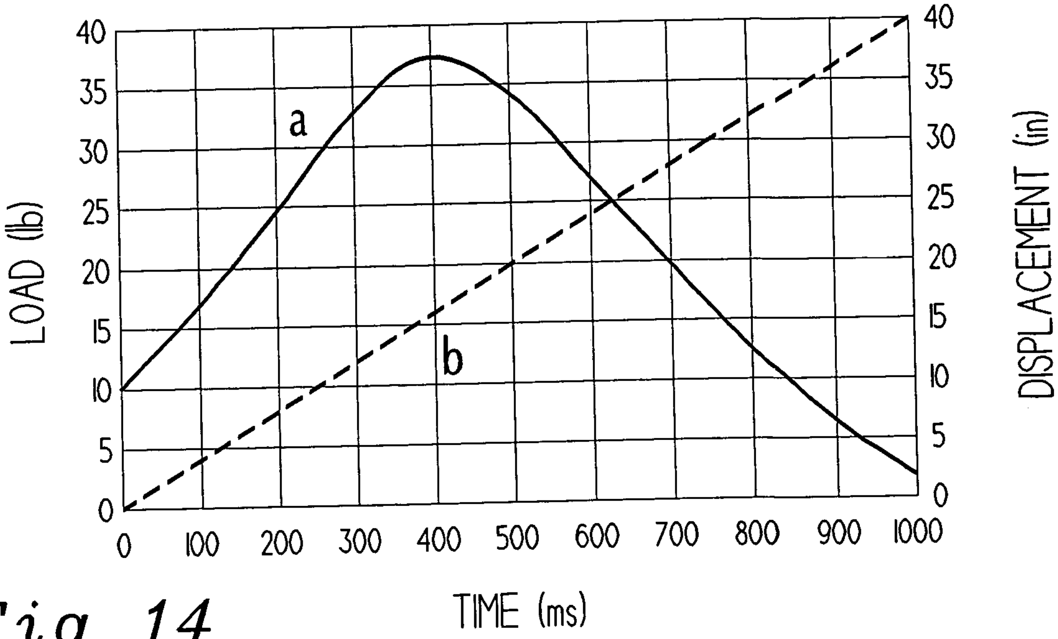


Fig. 14

MAXIMUM STRENGTH MEASUREMENT

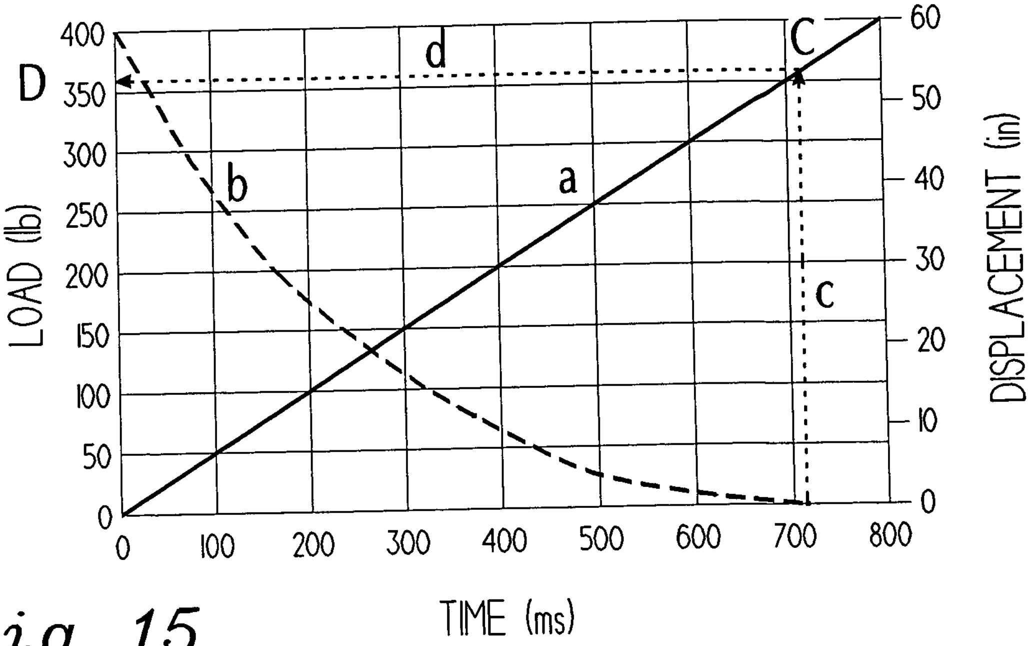
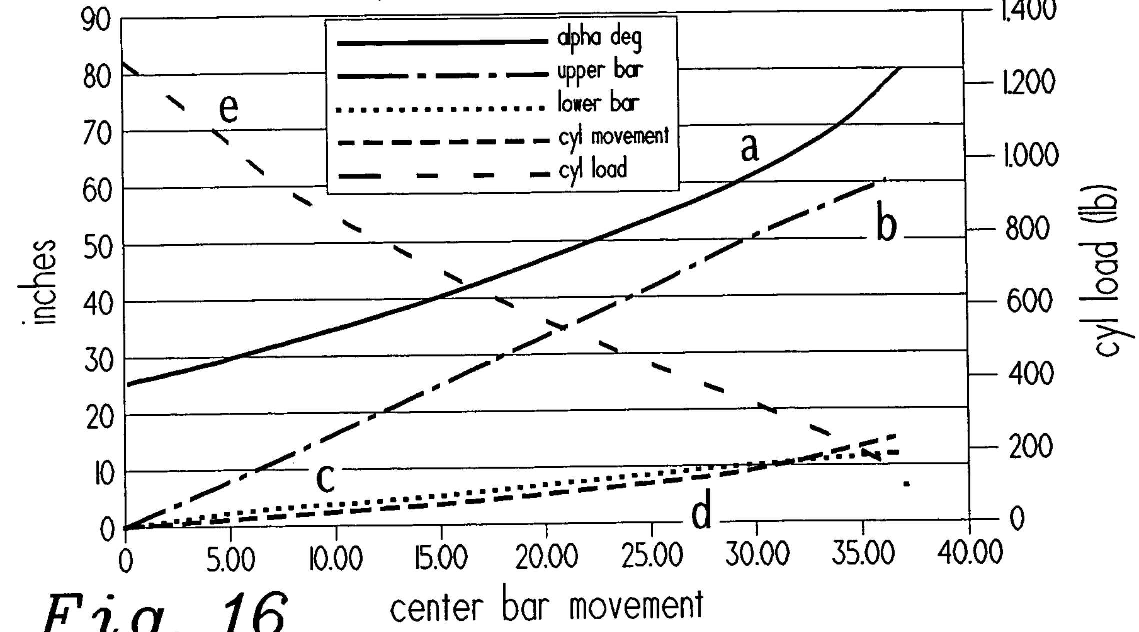


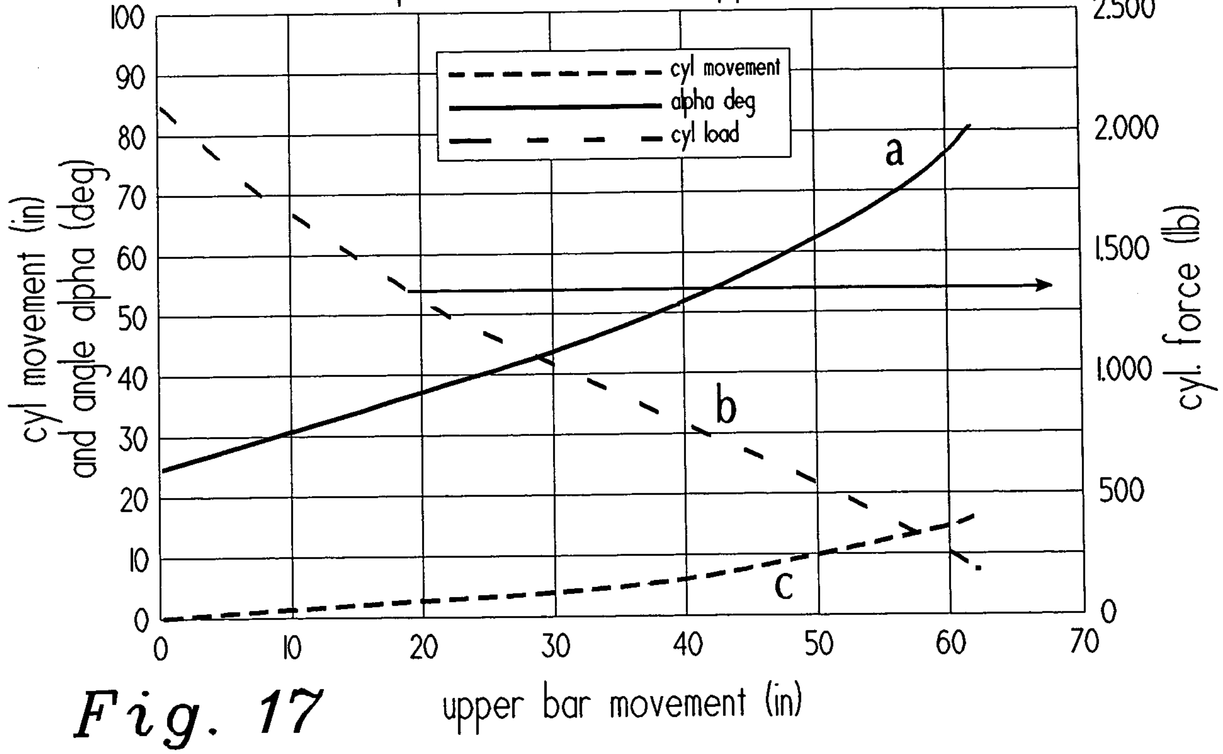
Fig. 15

10/032,993



cyl load and movement = f(center bar displacement) at a load input of 200 lb at the center bar

Fig. 16



Cyl. force and movement as function of upper bar movement. input load 200 lb at upper bar

Fig. 17

10/032,973

Cyl. force and movement as function of center bar movement.
input load 200 lb at center bar

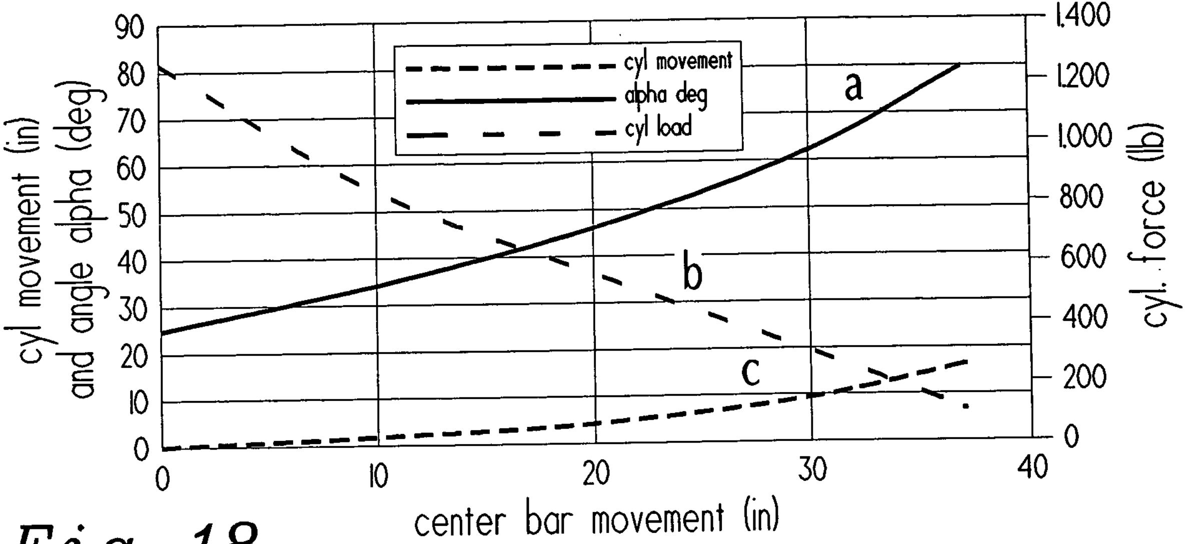


Fig. 18

Cyl. force and movement as function of lower bar movement.
input load 200 lb at lower bar

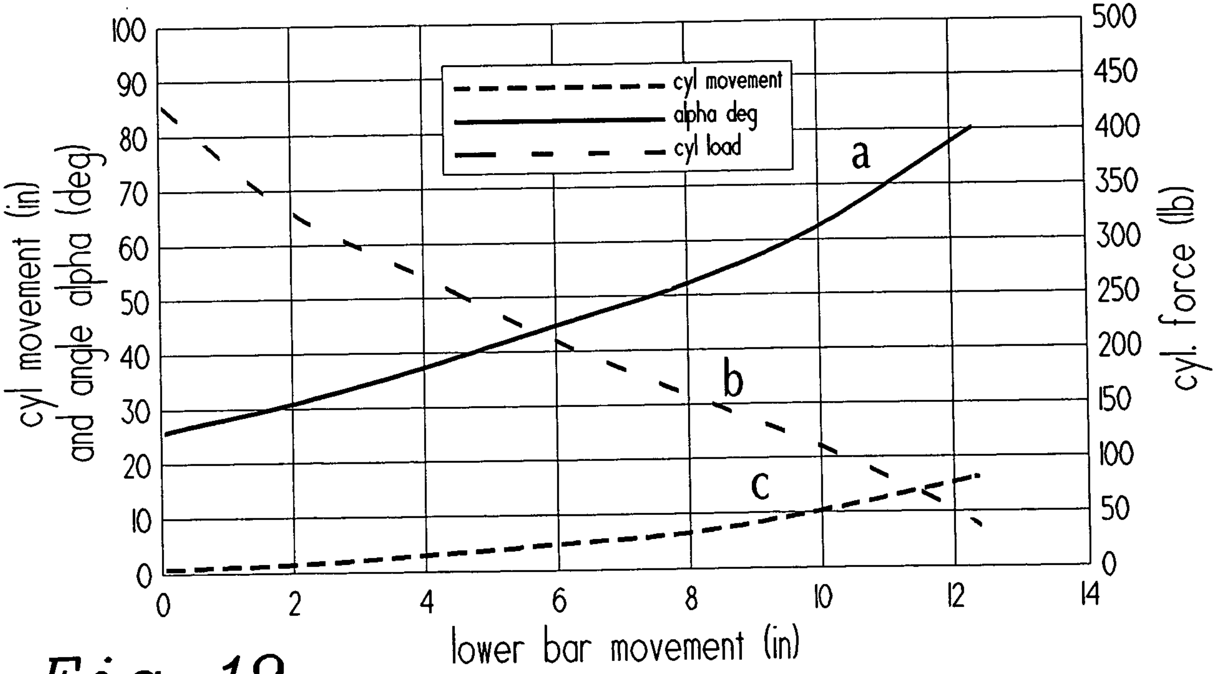


Fig. 19

10/032,993

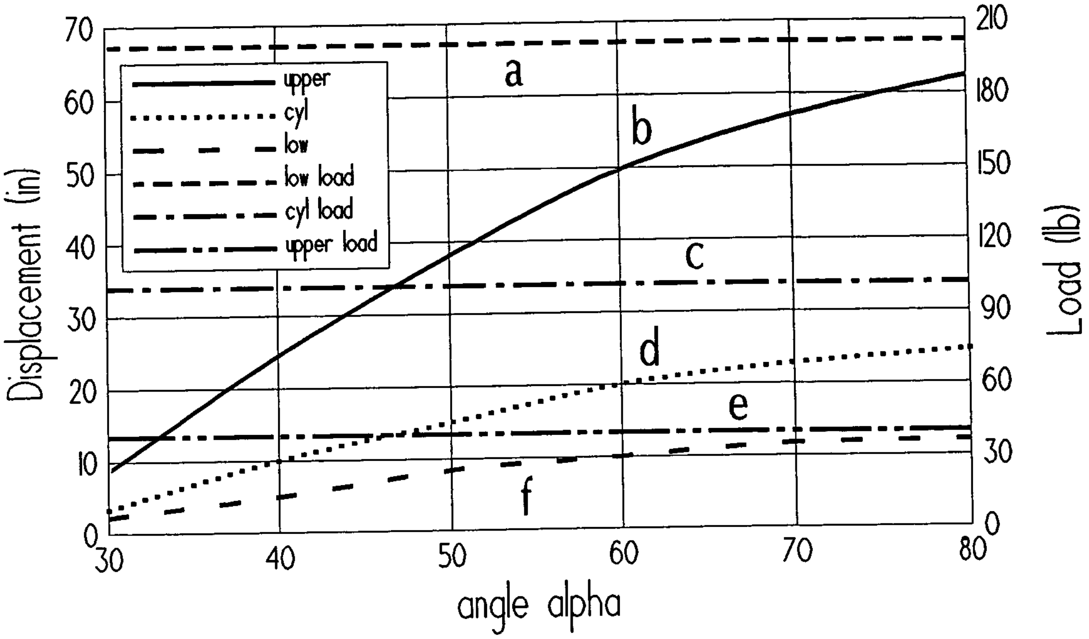

Vertical LOad Cylinder. example 80 lb load on load cylinder.
shown: input load on upper and lower bar and displacements

Fig. 20

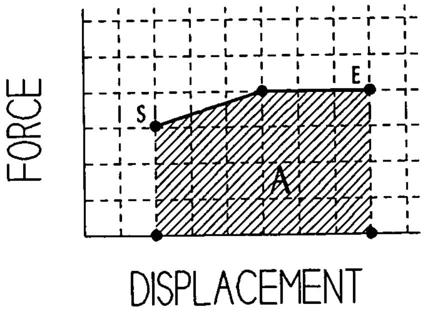


Fig. 21

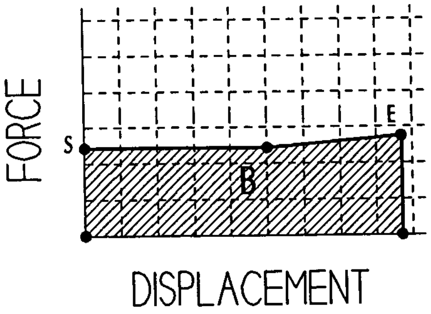
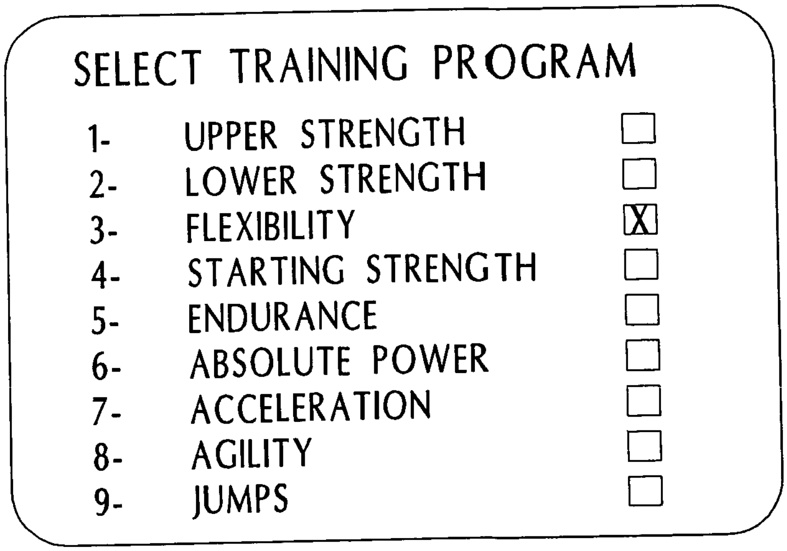


Fig. 22

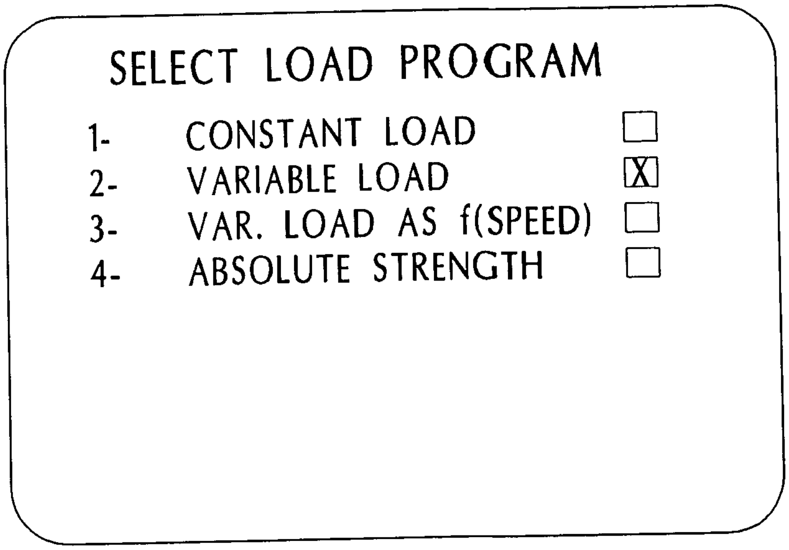


SELECT TRAINING PROGRAM

1- UPPER STRENGTH ☐
2- LOWER STRENGTH ☐
3- FLEXIBILITY ☒
4- STARTING STRENGTH ☐
5- ENDURANCE ☐
6- ABSOLUTE POWER ☐
7- ACCELERATION ☐
8- AGILITY ☐
9- JUMPS ☐

Fig. 23

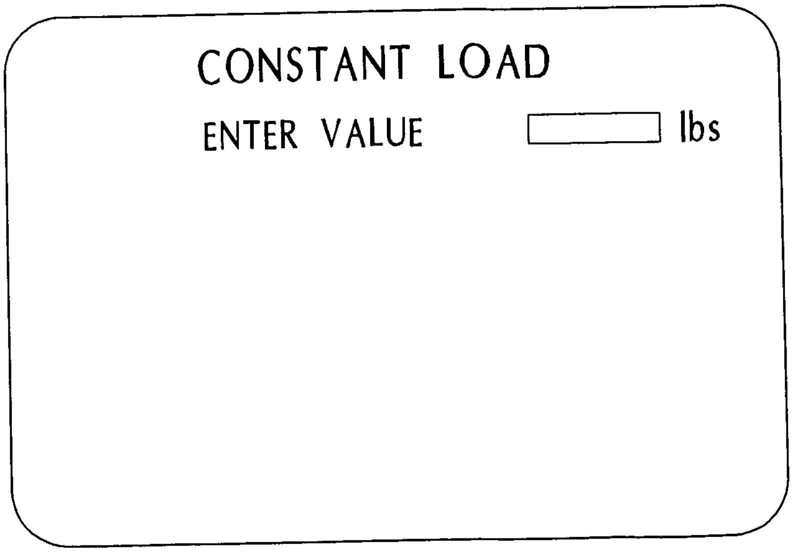
10/032,993



SELECT LOAD PROGRAM

1- CONSTANT LOAD ☐
2- VARIABLE LOAD ☒
3- VAR. LOAD AS f(SPEED) ☐
4- ABSOLUTE STRENGTH ☐

Fig. 24



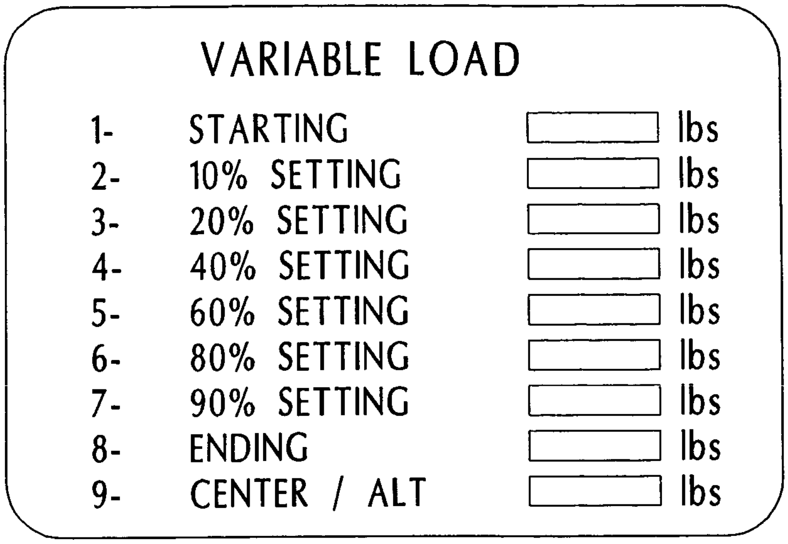
CONSTANT LOAD

ENTER VALUE ☐ lbs

Fig. 25

10/632,993

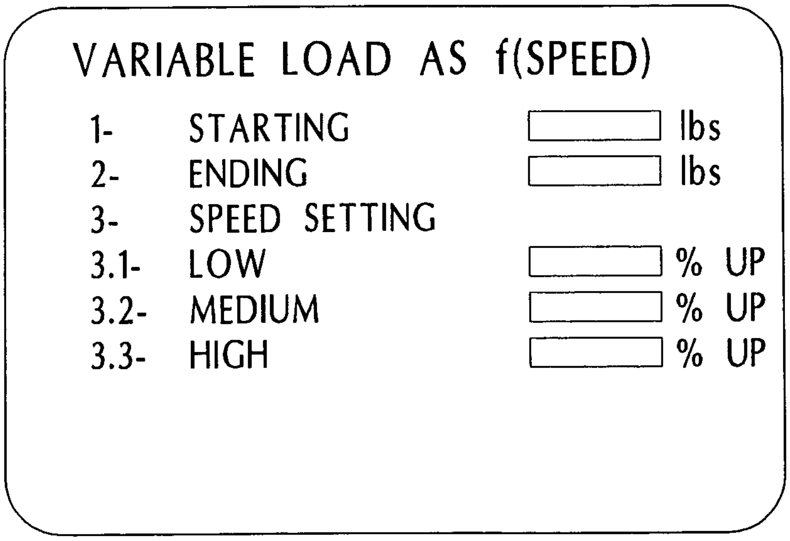
Fig. 26



VARIABLE LOAD

1-	STARTING		lbs
2-	10% SETTING		lbs
3-	20% SETTING		lbs
4-	40% SETTING		lbs
5-	60% SETTING		lbs
6-	80% SETTING		lbs
7-	90% SETTING		lbs
8-	ENDING		lbs
9-	CENTER / ALT		lbs

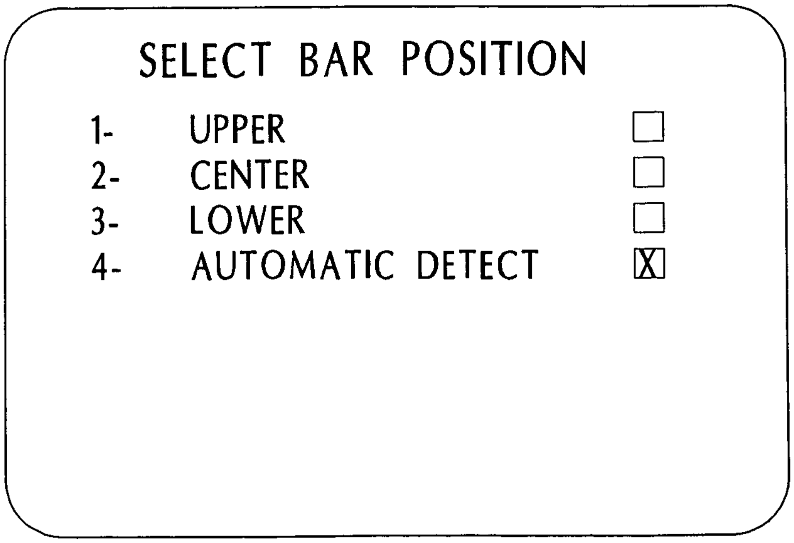
Fig. 27



VARIABLE LOAD AS f(SPEED)

1-	STARTING		lbs
2-	ENDING		lbs
3-	SPEED SETTING		
3.1-	LOW		% UP
3.2-	MEDIUM		% UP
3.3-	HIGH		% UP

Fig. 28



SELECT BAR POSITION

1- UPPER ☐
2- CENTER ☐
3- LOWER ☐
4- AUTOMATIC DETECT ☒